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Biometric trails of nonhuman environments. Medical imaging of plants' bodies in bio-artistic projects[1]

Introduction

Considering animals, plants or microorganisms as agential, subjective forces is very rare a field of reflection in contemporary humanistic studies. One of the leading philosophers of posthumanism, Carry Wolfe (2010, p. 99), expressed that the aforementioned problematics is a matter of fundamental doubt within the idea of animal studies as a part of posthumanist philosophy. Firstly, the postanthropocentric perspective of critical posthumanism postulates to find those dimensions within a human being that belong to the nonhuman sphere, also in the literal sense: for example, in reference to the biological dimension of coexistence with bacteria inhabiting the organism. Secondly, critical posthumanism explores the complex aspects of the co-existence of people with nonhuman life forms that are organized around the vital, affirmative and creative power of *zoe*, the biological life in itself (Bakke, 2010, p. 200). However, theoreticians and practitioners involved in animal studies clearly aim to create a more autonomous reflection on living nonhuman actors and these attempts should not be ignored.

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Paul Waldau states that one of the main goals of animal studies is to shift the boundaries of the transdisciplinary field of reflection – from an area of interaction between people to complex relationships between humans and nonhuman animals, as well as between animals themselves (Waldau, 2013, p. 9). Therefore, one of the most important areas of research in the field of animal studies is the sphere of interspecies communication which enables and facilitates mutual understanding and respect. However, as Waldau emphasizes, due to the fact that nonhuman animals are being ignored (and this is visible in every area of life), animal studies should also include many other disciplines and everyday activities, in which further transformations should take place, such as: education, law, trade, policy of medical, cosmetic and pharmaceutical companies, mass media, etc. (Waldau, 2013, pp. 10-12).

Animal studies problematize various types of relations with nonhuman beings that have changed over the centuries, but have still remained strongly dependent on socio-cultural conditions. However, animal studies also focus on empirical research into various species living in specific environments and include them in the scope of problems of modern ecology (S. Esbjorn-Hargens and others, 2009, pp. 1-15). One of the areas of interest in animal studies is research on the world of plants. It concerns questions about the subjectivity and agency of around 310.000 organisms in the context of anthropocentric practices that those organisms are constantly subjected to. What is more, as Matthew Hall observes, we share our everyday surroundings with plants and moreover, among all living creatures on Earth they are the species that we most often encounter. Therefore, philosophy of botany (Hall, 2011, pp. 3-4) should also become a part of studies on animals or ecological thought.

Nowadays, Hall's postulate does not seem to be only wishful thinking – this philosophical trend is emerging more and more clearly and it is supported by research in the field of ecology, anthropology and ethnology, which can be termed as "studies of plants". At least a few recently published books deserve to be mentioned in this context: "Botanicum" by Willis Kathy, "Secrets of Plants: Nature repeals the secret letter" by Anne-France Dautheville (orig. Les miscellanées des plantes), and especially Peter Wohlleben's "Secret Life of Trees" (2016). An interesting perspective in this area is also outlined in scientific books. Their authors examine the intelligence and cognitive abilities of plants, guided by an analysis of their behavioral patterns and anatomic specificity (biochemical processes, specific for plants "sphere of senses", etc.). For this purpose, Anthony Trewavas redefines the category of intelligence by expanding it into the plant universe (2013). He also examines neurobiology of plants, showing that

the neural systems in plants covers signaling and communication at all levels, from molecules to ecological communities (Trewavas, 2013). Daniel Chamovitz wonders how to define the knowledge possessed by plants (2012), and Eduardo Kohn poses questions about the way in which trees are thinking (and in general: about their cognitive abilities) and proposes to develop a new variant of an 'anthropology beyond humans' world (Kohn, 2013). Richard Karban considers plant-related connections between species communication and the biochemical processes occurring in plant organisms (2015). This perspective could also be considered as a part of *multispecies studies*, which focus on the specificity of particular species, but also on interferences between different kinds of living organisms (Th. van Dooren and others, 2016).

A common dimension connecting the philosophy of posthumanism with animal and plant studies is the reflection on the material (in the sense of the vitalistic form of matter, defined for example by Jane Bennett (2010)) as a form of life, a biologically understood corporeality, consisting of affective reactions and physiological processes, common to both human and nonhuman beings. Combining these perspectives, in my article I would like to present the postanthropocentric thinking about the body in a specific context: by analyzing artistic projects in which plant bodies were presented through the prism of the processes and strategies of bioparametrization. The parameterization strategies used in the projects in question are based on medical imaging: x-ray, tomography and MRI examinations. Thus, they belong to a special kind of artistic project that attempts to show the 'inside' dimension of a nonhuman body, or in other words – to reach the sphere of the bodily interior, which from a human perspective is usually ignored.

The nonhuman turn in the perspective of biometric interconnections between living beings, media and technology

Studies on animals are one of the foundations of the postanthropocentric paradigm that emerged from the so called nonhuman turn and develops the discussion about issues connected with so called posthumanist ethics. In my opinion this category should be understood in a descriptive way – as a partial shift from the human sphere towards the agency of nonhuman actors. Richard Grusin, who introduced this concept to the humanistic debate, stresses that in this sense both animals, living and unanimated organisms in general, including also affective spheres, organic and geophysical systems, material objects and technologies are understood as 'nonhuman' forms of life and agency (Grusin, 2015, p. IX). He also notes that – regarding the current interest in the nonhuman sphere, that can

be traced back to Charles Darwin's 19th-century findings and William James's observations about the materiality of the body – the "return beyond the human sphere" is carried out in many areas of life and remains subjected to a diverse philosophical reflection, such as Brunon Latours' famous actor-network-theory, the affective turn, the speculative realism and the aforementioned animal studies (Grusin, 2015, p. X). As the theoretician states it should be recognized that the 'departure' from the human sphere is associated with the criticism of the domination of the constructivist paradigm in philosophy and cultural studies. This is because the creation of the nonhuman through various forms of representation strengthens the concept of a human as a privileged subject. In this sense, the nonhuman turn is also intertwined with the emergence of speculative philosophy and the "turn beyond the signs' representation" – as I suggest we should understand the original term "non-representational theory" (Thrift, 2008).

As Grusin points out, the basis of the nonhuman turn also lies in the belief that human and nonhuman beings share the embodied, somatic sphere of affects – this assumption is oppositional to a constructivist approach. It is also worth adding, as the author claims by referring to the reflections of Gilles Deleuze and Félix Guattari, that the concept of materiality in the nonhuman turn is associated with the embodied turn. According to the co-author of "Remediation: Understanding New Media" the body is undoubtedly one of the most important dimensions of materially understood reality (Grusin, 2015, p. XIII).

Gilles Deleuze and Felix Guattari in their philosophy of vitalist materialism recognize that affect is "a nonhuman state of becoming" (2000, p. 187). This process is an indicator of the new quality of relationships established not only between different species, but also between entities of the various ontological status, e.g. man-ocean (2000, pp. 187-188). Thus, multidimensional processes are created, as well as connections based on the affective, non-centralized, unstable fluid and dynamic exchange of potentials. Affect is transversal, which means that it transcends traditional categories that define body and matter, that it crosses the division into subject and object in experience as the intensity of feelings and sensations. Embodiment is the key here, because affective experience is a material "channel" that connects the digital information stream with the physical, biological body. Technologies, being an important element of these connections, in turn enable establishing relationships between entities, stimulate direct experience. According to Patricia Ticineto Clough, the development of technology enables "seeing" affect and creating connections between them and the inorganic matter. An affectively conceived body is nowadays extremely often associated with the forms of Deleuzianically understood assemblages, i.e. what is

material and virtual, and this is conducive to negotiating the boundaries of the organic sphere (2007, pp. 2-12.). It is becoming increasingly difficult to point to an area of organic matter that would be "ontologically pure", and thus not hybridly connected to human products (the case of garbage establishing transversal relationships with nature at landfills) or would not be negotiated due to technological solutions.

In the context of the nonhuman turn, Joanna Zylinska develops her reflections on visual studies, which she describes as "Nonhuman Photography" and "posthumanist philosophy of photography" (Zylinska, 2017, p. 3). In her book she introduces a change in thinking about photography and shows its role as a tool functioning in postanthropocentric optics. As she claims:

> Yet I will also argue throughout the book that even those images that are produced by the human, whether artist or amateur, entail a nonhuman, mechanical element. By this I mean that these images involve the execution of technical and cultural algorithms that shape our image-making devices as well as our viewing practices (Zylinska, 2017, p. 2).

Moreover, the author introduces a kind of "ecological model of perception as a more embodied, immersive, and entangled form of image and world formation" (Zylinska, 2017, p. 8), which is also crucial for understanding biometric photos, based on direct, post-somatic interferences between organic bodily matter, technical devices and implemented physical forces. In general, I am following Zylinska's assumptions, especially when she re-defines photography as "a material record of life" (2017, p. 10) – which should also be understood in terms of a record of biological processes of nonhuman bodies. However, in her deliberations she does not take into account biometric photography, which not only illustrates the life of nonhuman beings in a special way, but arises from complex, biopolitically and institutionally related connections between human and nonhuman actors. Therefore, my reflections are a complement to posthumanist considerations on the so-called postimages (Hoelzl, 2017) of plants interiors.

One of the symptomatic variants of the turn beyond the human sphere in philosophical reflection that is important for my considerations, is also the inclusion of posthumanistic assumptions on living beings other than people in the field of media archeology, which Jussi Parikka proposed in his concept of insect-media. Patterns of physiological behavior of insects have been used many times in the theory of culture and media, also as inspirations and explications of certain theories and anthropocentric concepts (e.g. left-wing politics in terms of Hardt and Negri). Thus, they are a good example of the transpositions ob-

served by Parikka between simple life forms (like insects) and media technologies (Parikka, 2010, p. XIV). In the concept of media-insects Parikka refers directly to the philosophy of matter developed by Deleuze and Guatarri, and indirectly to the findings of Eugene Thacker, Rosi Braidotti and Brian Massumi, oscillating around the concept of affect. He emphasizes the participation of media and technological devices and solutions in material correlation with biologically understood corporeality, and perceives corporeality not as a stable object composed of cells, tissues and organs, but as an organism existing in various embodied relations with the environment and nonhuman forces[2]. In this context, the author refers to the theory of assemblage (derived from the philosophy of matter introduced by Deleuze and Guatarri) which means a conglomerate of affects and relations between any kind of beings that always exist in the form of "becoming" and emerging, and is the basis of posthuman ontology. Interestingly and meaningfully, Deleuze and Guattari derive the concept of assemblage from the concept of *rhizome* – a term, which originates from botany, and in general means a "continuously growing horizontal underground stem" (Ferrando, 2019, p. 179). In Parikka's opinion these types of affective relations connect human beings, technologies and nonhuman entities through entangled interferences, by crossing the realm of semiotics and turning towards direct carnal experiences (Parikka, 2010, XXV). In this sense an assemblage is not only a collection of already existing elements (for example, technology taking the animal as its mode) but it itself becomes a mode of cutting flows (Parikka, 2010, p. XXVI).

This theory includes reexamination of media categorizations using the optics of the nonhuman turn paradigm and establishes a common area for media theory and animal studies. The concept of assemblages, reformulated in Parikka's considerations, allows me to consider medical imaging of plants and animals as a special kind of connection between nonhuman creatures, medical devices [based on physical forces (mostly ionizing radiation) that impact organic matter] and the socio-institutional context in which procedures and strategies of bioparametrization are established. Putting together theory of affect, media and technology in the perspective of the nonhuman turn aims to form a conceptual framework for understanding visual art based on bio-data.

Medical imaging of plants in the perspective of reflection on the rights of nonhuman beings

A large part of the projects based on data obtained from the body aims to explore the animal, vegetable and microorganisms' world. The first artistic

[2] See also more broadly on the significance of the assemblage concepts of Deleuze and Guatarri: M. Delanda, *Assemblage Theory*, Edinburgh University Press, Edinburgh 2016, pp. 1-7.

projects which used biometric data were based on X-ray examinations of plants. These were the artistic activities of the photographer Dain Tasker. While creating them, Tasker collaborated with a friend – a physicist. His works were exhibited in 1939 as a part of the Golden Gate Exposition in San Francisco (Reikes, 2003, p. 1150). Tasker extracted singular flowers from previously photographed landscape environments. Probably, he was the first artist who was not interested in the colors of flowers, who did not try to create an artistic ornament that matched the criteria of proper composition, but who tried to explore their anatomical features, and thus to understand the action of their inhuman bodies. "Tasker produced ghostly images devoid of color, any image appearing more like an ink drawing than photograph" (Sierzputowski, 2016). X-ray images of the artist-radiologist showed the invisible structure of flowers, and created a new kind of cognitive act, an epistemological action towards nonhuman beings. Plants have not been transformed, no new species have been created – because of this fact it is difficult to talk about the ontological or ontogenetic dimension of artistic practices that are characteristic for bio-art projects. However, X-ray examinations of plants had been carried out much earlier [published since 1913 (Reikes, 2003, p. 1150)] and are still one of the most important methods for determining plant species and imaging their anatomical structure. However, it is worth adding that attempts to systematize knowledge about plants were carried out much earlier. The first catalog of the Jardin du Roi Paris botanical garden published in 1636, which included over 1800 different plants, can be mentioned here (Dear 2005, pp. 126-127). Yet, as Michael Marder points out, creating the aforementioned catalog should be seen as the process of disciplining plant bodies primarily through strategies resulting from nominalism – naming and ordering specimens and species (Marder, 2013, pp. 4-5). The introduction of medical imaging has opened up an area of interest in the physical and material interiors of plants.

Marder, a theorist specializing in political philosophy and the philosophy of nature, focuses especially on the rights of plants – an issue which, until recently, has not been explored in fields other than ecology (protection of endangered plant species). Marder is the author of the book "Plant-Thinking. A Philosophy of Vegetal Life" (2013) which became groundbreaking for the philosophy of botany. He aimed to show the meaning of a vegan life in the context of philosophical theories and legal arrangements. His goal was "to extend the scope of ethical treatment and to address the diverse modes of being of all living beings, many of which are deemed too insignificant and mundane to even deserve the appellation <<others>>" (Marder, 2013, p. 2).

In the article "Should plants have rights?" Marder builds his argument around the question of whether people are the only ones who have political, social and ethical rights (2013). Referring to the "Universal Declaration of Human Rights" and "Declaration of the Rights of the Child", he notes that in both documents there is a clear statement about the necessity to protect people who are the weakest and have no chance of self-defense. Despite the fact that they are not people, plants belong to that vulnerable category. Although in the course of evolution, plants have developed a number of mechanisms that allow them to defend themselves from other plants and animals, they still remain almost helpless against human beings. Even if we have, to a certain extent, changed our way of thinking about animals (when they were identified with machines by Descartes), our perception of plants is still based on treating them only as mechanical beings, deprived of any higher functions (Marder, 2013, p. 47).

However, Marder's conclusions are not based on the often trivial arguments used by ecology, but on the philosophical analysis of the significance of the category of legal subjectivity. Recalling the well-known considerations of Hanna Arendt, the theoretician notices that this category – primarily due to the philosophical concept of subjectivity – is identified with the agency and ability to actively shape the world and plants have such an ability. As Marder claims:

> Plants clearly do not grow haphazardly; rather, they display tremendous developmental plasticity, congruent with their inclusion in the category of subjectivity. They act upon the milieu of their growth by controlling the microbial fauna of the roots, summoning through airborne biochemical cues the predators of the herbivore insects that threaten them, or regulating root volumes in response to the identities of their neighbors, recognized as kin or not. A thick, substantive notion of plant rights will be possible only if it grounds the fresh variation on the right to have rights in the uniqueness of vegetal subjectivity (2013, p. 47).

Contrary to appearances, it does not take into account, as a prerequisite, the idea of civic duties. The implication of such assumption is that: "The right to have rights is won by virtue of being rather than acting in a particular way. In other words, it is ontological, not pragmatic" (Marder, 2013, p. 48). The category of subjectivity in legal discourse requires the recognition of immanence of life, postulated by Nietzsche or Spinoza and numerous contemporary philosophers, focusing on the biological dimension of life. Marder proposes to treat plants as:

> "subjects with a rather open-ended scheme of growth and development (indeed, a scheme more open-ended than those of humans and animals),

> they possess intrinsic worth, pursue a good of their own, and thus merit respect. Plants do not exist exclusively for animal and human consumption; on the contrary, they had already "flourished long before we made our appearance on the evolutionary scene. This is the fundamental reason for entertaining the possibility of plant rights. (Marder, 2013, p. 48).

Marder's assumption (as well as the ideas of other thinkers who I have already mentioned) proposes the re-evaluation of traditional metaphysical values and humanistic ontologies. Plants are a part of the natural environment, they are ontologically autonomous entities that do not have only utilitarian functions in the human world, but on the contrary – they have intrinsic worth even if it is different from the one that is possessed by human beings or animals. The immanence of life also means that they have "the right to be free of arbitrary violence and total instrumentalization" (Marder, 2013, p. 50), also as vulnerable, living creatures rather than things.

The artists whose projects I have analyzed, considering the status of plants, usually focus on the issues that are included in the philosophical assumptions of Zylinska, Parikka or Marder. They analyze the ontological uniqueness of plants and they attempt to establish epistemological relationships with them – treating plants as autonomous entities, guided by their own metabolic and developmental goals. The projects in question often consider the issue of plant-agency, which manifests itself both in relations with the environment in which plants exist, as well as in the various connections between plants and the human world. Nonetheless, in this case, the technique used to create projects always remains problematic – likewise in bio art projects. Medical imaging is inscribed in a broader medical discourse as disciplining, normalizing, and excluding. Therefore, the method itself can seem as an anthropocentric gesture, regardless of the critical and subversive posthumanist potential of biometric projects.

Plants' bodies in biometric art projects

There are many projects based on biometric data in which the plant and/or animal body co-creates the artistic project. However, these projects rarely use typical biometric identification methods (such as e. g. face recognition). This is certainly due to the fact that in forensic procedures, but also in veterinary practices, they are not commonly used to explore animals and plants. The procedures which – in this regard – are most often used are DNA identification and medical imaging procedures, among which X-ray and tomography imaging are most commonly used. Both of them are helpful while determining the individual characteristics of a given species or diagnosing pathologies occurring in

animals and plants – therefore, they can be considered in terms of strongly systematizing and normalizing practices. It is worth noting that most of the artists who use biometric methods have a radiological education (some of them work in this profession), they also have access to equipment and conditions necessary to perform X-ray scans. A tomographic examination of a bird or rodent species, or X-ray examination of a flower can perform two functions simultaneously: the first of them is to create a scientific, anatomical documentation of an individual, while the second one is to constitute the basis for artistic activities – this is the case of most of the analyzed projects. Each of these artists combines radiographic techniques with media technologies (both analog and digital), often linking them with strategies characteristic of traditional works of art – turning them into spatial sculptures or creating photographic collages of them. In my research I am especially interested in representations of plants.

Projects that implement biometric procedures raise numerous problems in the field of exploring the relations between living organisms (human and nonhuman) and technologies. First and foremost, it is a reflection on the technology of medical imaging that becomes an epistemological and biopolitical tool, as well as on the status of imaging that goes beyond the scope of traditional photography. Secondly, these are considerations on the affective connection of the bodies of living beings (plant, animal and human), which, in a special way, become visible and complex in the situation of illness, destruction or death of these organisms. In these projects one can also find an interesting representation of hidden performativeness and processuality of plant interiors.

Some of these artists primarily focus on exploring the 'secret' plant species that are characteristic solely of the environment in which they live. Chris Torn focuses on the species found only on the islands of Great Britain[3], Andre F. Bruwer on specimens of South Africa[4], Peter Dazeley on species of exotic flowers (and also fish) from different parts of the world[5], and Steve Miller in his project "Health of the Planet", illustrates with X rays, CT scans, MRIs, electron microscopes and satellite imagery the flora and fauna of the Amazon, showing the beauty and incredible diversity of the "lungs of the world"[6]. The last of the projects is especially important here, because the nature of the Amazon is con-

[3] You can see the Website of the artist: http://www.thornartstudio.com/xrayart.html, (accessed: 25.07.2019).

[4] You can see the Website of the artist: (Skiagraphics): http://www.skiagraphics.com, (accessed: 25.07.2019).

[5] You can see the Website of the artist: http://www.dazeleyfineart.com, (accessed: 25.07.2019).

[6] You can see the Website of the artist: http://stevemiller.com/drawings/health-of-the-planet/, (accessed: 25.07.2019).

sidered: on the one hand to be one of the most unexplored areas while on the other hand one of the most damaged by human activities. Miller focuses primarily on Brazilian rainforests, registering various species of trees, shrubs, mosses and lichens with the help of medical imaging, and thus supplementing "plant atlases" with specimens that researchers previously had no access to. Therefore, his epistemological curiosity can be seen as a reproduction of a hegemonic, anthropocentric gesture. Sarah E. McFarland and Ryan Hediger emphasize that this issue is also related to the anthropocentric vision of agency, according to which the goals of human actions are more important than the goals of other beings (McFarland, Hediger, 2009, pp. 5-6). However, the artist is aware of the damages that are caused in these areas due to corporate interests that result from capitalist exploitation. For this reason, he also presents the effects that rainforest fires have on plant and animal organisms, such as: lung and circulatory system damage, transformation within the homeostasis of plant environments, etc. As Mark Bekoff, one of the leading ethologists involved in the development of animal studies, states: a conscious ethical attitude often begins with sincere interest and therefore nonhuman beings require our fascination and understanding for their habits, anatomy, etc., (Bekoff, 2006, pp. 225-230).

Interestingly, the trip with scientists studying the local flora and fauna species around the Amazon was also a source of reflection on the exploitation of the world of plants for Brunon Latour. In his famous essay, Latour emphasizes that during scientific research into the reality of non-people, a fragment of the world is always transformed into a laboratory – an institutional space for parameterization, using two-dimensional inscriptions, that always results in isolation of the studied reality and hegemony over the nonhuman sphere (Latour, 1999, pp. 30-32). Latour's reflection is developed and expanded by Anna Lowenhaupt Tsing who shows the effects of scalability in relation to nonhuman environments. Scalability means the use of uniform measures and standards that cause a deep reduction of the studied world by eliminating elements from the measurement testing that do not fall within the accepted patterns – including manifestations of biological diversity (Tsing, 2012, pp. 505-506). Medical imaging is an undeniable example of scalability with the help of machines operating with the right amount of radiation and algorithmic data visualization systems[7]. The "plant atlases" created by the artists I mentioned above are somehow automatically burdened with the perspective of biopolitical exploitation – even if they are created mainly for artistic purposes. Therefore, artistic projects of this kind are characterized by constant negotiation between

[7] In addition to scientific research, one of the clearest manifestations of such practices for plants is the creation of huge plantations, considered in the concept of Plantationocene (Mitman, 2019).

the subversive cognitive act and the disciplinary circulation of knowledge that gives power (in Foucault's understanding).

Biometric works of artists, who are fascinated not only with the "photographed" plants, but also the imaging process, bring analogous critical potential and ethical risk. Albert Koetsier gave the entirety of his realizations the significant title "Beyond the Light", which indicates in his works not only on the emergence of various life forms from the dark, from the invisible realm, but also on the fact that these are not pictures taken by traditional visual techniques, always dependent on light, but by a specific submedium[8]. Particularly interesting in this area of art are the works of Judith McMillan[9] and Erica Seccombe[10].

McMillan claims that, while using medical imaging tools, she crosses the limits of accessibility set by the traditional form of photography and violates the limited viewing area available for human beings. In all mentioned biometric projects medical imaging is perceived by the artists as a kind of technological prosthesis, human sight enhancement, which is not implanted inside the human body, but makes it possible to observe a reduced image of the (in this case) nonhuman interior. McMillan, using the biomedical apparatus, creates photograms – she places the tissue of the examined flower directly on the X-ray film and radiates it, showing, thanks to this energetic flow of potentials, the internal sphere, strength and fragility of flowers. She creates compositions reminiscent of traditional still life paintings. In the pictures there are sometimes small twigs and leaves of trees and shrubs, bark fragments and buds. On X-ray plates you can see the veins of flakes and leaves, spurs, peduncle, axes and stamens of flowers, sometimes also ovaries. Structures of stems, shapes and root structure have been revealed as well. However, the author proposes a significant recontextualization of paintings: it shows what the painters did not present – the inside of plant bodies. Due to this special creative method, in McMillan's projects you can see a clear reference to the concepts of Zylinska and Parikka. Here, plants are a physical, material component of the imaging procedure. Therefore, those pictures contribute, in the ontological sense, to a kind of "nonhuman photography" and function as an element of organic and technological assemblages. In this respect, plants' agency and autonomy remain questionable, which means that the project raises ethical doubts. However, from the point of view of artistic creation, McMillan's projects are an interesting example of work based on biological matter.

[8] You can see the Website of the artist:http://www.beyondlight.com/about/, access: 26.07.2019.

[9] You can see the Website of the artist: https://judithkmcmillan.weebly.com/, access: 26.07.2019

[10] You can see the Website of the artist: http://www.ericaseccombe.com.au/item.asp?iID=2, access: 27.07.2019.

Erica Seccombe, an artist from Australia, who emphasized the processuality of the transformation of living organisms, examines, among others, the germination process of seeds (e.g. mung beans). She presents them in the form of photographs obtained in a three-dimensional micro-tomography procedure and combines them on a time-lapse basis into a digital installation in the form of a tomography video. The artist describes works such as "Germinating seeds" or "Grow" as "work in progress", because the process of germination, growth and gradual dying of plants from a given species does not end with several selected seeds[11]. Seccombe's realizations clearly point to the error of anthropocentric thinking about the passivity of plants (or nonhuman beings in general in opposition to active human subjects), their constant movement, the affective process of transformation, material changeability: seed cracking, growth, germination, phototropism (movement towards the sun) or hydrotropism (movement towards water). She reveals the performative activity of the plants, manifested in a continuous affective transformation (Massumi, 2002, pp. 2-5). The artist also exposes and examines the agency of plants, which, in this case, does not concern the human universe, although its shape is constantly influenced by plants. Therefore, Seccombe works – in relation to nonhuman beings – echo the thought of another artist who focuses mainly on human organisms – that is Dr. Maria-Theodora Dimaki, who claims that radiographic images are a snapshot of the body, one of the kinds of non-obvious storytelling practices (Lamont, 2013).

According to Monika Fludernik (1996, p. 15), a narrative can be created only by a human being, a conscious entity with the ability to formulate a story in signs. The narrativity of the projects based on biological parameterization I am referring to, is however, significantly determined by the processual performance of plants, by the natural physiological and metabolic processes that they undergo. Their dynamically changing body is at the heart of the story. It is a performative story whose actor is – according to the approach of Jane Bennett's vibrating matter (2010) – a nonhuman interior, open to transformations and manipulations due to technology. The material agency of plants means that projects develop hybrid narrative with postanthropocentric orientation. On the one hand, the plants are given a 'voice', they are the main protagonist talking about themselves through material transformations of the interior. On the other hand, the concept of the project was created by the author, who carried it out with the help of biometric technologies and by using creative visualization techniques. The registration thus obtained is a special type of storytelling realized in mixed media's storyworld and through a post-digital narrative, if we define this category as the relationship between the digital, biological, cultural, and social, between virtuality and reality, implemented

[11] You can see the Website of the artist: http://www.ericaseccombe.com.au/item.asp?iID=2, access: 27.07.2019.

media and augmented space, between sensual experiences and network narrative practices (Alexenberg, 2011, pp. 33-40).

The affective connection of the bodies of living beings are introduced in a different way in the projects of Boo Beaumont and Mark Penhale. For Beaumont, X-ray, MRI and tomographic photographs and films of flowers are therapeutically meaningful. The artist started to create her work after her cancer illness, which for three years kept her in bed and throughout which she had to undergo a series of medical imaging examinations. Her work, signed with numbers and attached to the title-numeral "Metamorph" each time, aims to place herself, her illness and complex transformation processes in the chain of life (in the *zoe* sphere), in relation to plants, beings susceptible to destruction, 'who', at the same time, have an extraordinary strength of survival. The project consists of the photos of flowers (such as chrysanthemums, tulips, zantedeschia), along with an X-ray film, which shows in a performative way the inside of the flowers and is accompanied by Orlando Kimber's ambient soundtrack, but also of the twelve portraits of remarkable women that Beaumont took earlier. The perception of these inter-species connections and synergy has enabled Beaumont to draw energy from the permanence of nature, as well as to perceive the processes of its own physiological transformations in regard to the inter-subjective, affective changes of the animated matter (Com. Clark, 2016). What is especially important, the flowers bear a strong resemblance to female reproductive organs. In this way, the artist additionally confirms the biological, bodily similarity between the body of a woman and that of a plant. However, this is not a similarity that revives a woman's passivity due to her connection with nature, but the artists work is an attempt to give this relationship a new meaning: an active, causative alliance. In this project, seeing the connections between the human and plant body does not mean the process of becoming-a-plant (in relation to the famous concept of Deleuze and Guattari), but rather becoming-with-the-plant, creating interspecies solidarity (Haraway, 2008). Although, it should be remembered that this is achieved taking a human perspective (that of the artist).

The second artist, Mark Penhale, a veterinarian and photographer living in Australia, created two cycles of X-ray photographs "Broken" and "Shadows", giving them a special, eschatological dimension, which is connected with processes of the biological circulation of matter connecting human and nonhuman beings. However, Penhale does not look for the internal beauty of the objects. On the contrary, by focusing on the dead, mutilated creatures and objects, he shows the cruel side of our co-existence with other life forms, mainly with plants and animals. Radiographic techniques are used in the artist's works to reveal details that are not visible to the naked eye, so we pass them by indif-

ferently[12]. The crushed skeletons of mice, broken bones of birds driven over by cars, disrupted leaves of plants, gutted fish, chickens' rapes presented on photos, which for many people are a delicacy, are the results of human-nonhuman coexistence that are difficult to affirm. They point to the exploitation of the sphere of *zoe* associated with excessive production and consumerism. As Rosi Braidotti writes, this attitude towards nonhuman beings perpetuates known patterns of exclusion, exploitation and oppression (Braidotti, 2013, p. 48). However, at the same time, they also form the contemporary face of nature-culture.

The process of tissue disintegration depicted in the X-ray pictures also marks one of the areas of posthuman liminality. Penhale records the moment when already dead bodies of nonhuman beings begin to fuse with the surrounding organic matter in the process of cell death. On the X-ray images, they were immortalized in a state of constant transience between life and death. As Susan Squier writes, liminal forms of life exist in the "in between" state, they inhabit the marginal zone of life – like the remains of animals and plants, covering parks, forests, farms and breeding areas. What is more, as the author points out, these kinds of new liminal lives negotiate the boundaries of our common taxonomies in reference to the sociological, ethical, biological or economic dependencies (Squier, 2004, p. 4). Thus, the circulation of affection becomes entangled in capitalist and biopolitical relativity in which the agency of plants and animals (in the case illustrated by the project, their situation is identical) is independent of their will, while at the same time it constitutes a factor shaping human civilization.

The encounter with plants in all the selected works takes place in a double carnal dimension – direct, when the artist prepares flowers for examination and later on an epistemological one, when their inner, organic universe is discovered. Interestingly, all creators refer to the plants studied as "vegetal subjectivity". As Marder points out, they try to show the experience of the anatomical complexity of plants, which are equally subject to imaging research as the human body. It makes the artists aware of interspecies communication, coexistence in the biological, affective dimension. This is even more noticeable when some series of photographs depict plants in the biological process of transformation – flowering, wilting, budding. Then scans become a tool, a "portal" that allows us to penetrate the area of the unusual kind of transformation to which all forms of life are subject. As Monika Bakke points out:

> The limit of what is human and nonhuman is most often determined by

[12] You can see the Website of the artist: http://www.markpenhale.com/about, access: 27.07.2019.

> the animal, while plants – although we could not live without them – mistakenly appear to be beings with whom we are not really connected. However, technology-supported science now provides us with information about plants that allows us to look at their world from a view that one would think belongs only to the artistic fantasy and philosophical imagination (Bakke, 2010, p. 132).

Projects based on the parameterization of the body combine these spaces, scientifically confirming fantasies and premonitions about plants, showing the communality of biological duration and transformation.

Conclusion

Plants are more and more often the protagonists of contemporary art. However, the interior of a vegetable body is rarely shown in artistic practices, it does not appear as an element of design and it is also absent in land-art projects. Even in transgenic works, what remains of interest is what, due to genetic manipulation, is visible on the outside (an example of Edurado Kac's "Edunia"). Therefore, biometric projects are unique propositions of critical reflection focused on nonhuman beings.

What is more, projects of all bio-data artists support the ongoing reformulation of the dominant media thinking as an area of exclusively human communication techniques and procedures. Here, the original parameterization techniques serve to broaden the epistemological spectrum beyond the anthropocentric area. It is worth emphasizing again that plants are not seen in these projects only as human-influencing organisms, towards which we should have a utilitarian relation, but increasingly – as in Hall's book or Marder's postulates – the subjective, goal-oriented and agential functions which are granted to them. Subjectivity and agency are – similar as for example in the Wohlleben considerations – determined by references to the human universe, to the traits that characterize a human being. As Wohlleben shows, trees care for their offspring, take care of older individuals, communicate with each other. If we do not apply human categories to them, it will be difficult to understand their behavior, the specificity of their functioning (Wohlleben, 2016, pp. 54-58). In this perspective, anthropomorphism does not mean only the application of human measures to the universe of nonhuman beings, but also that the use of certain patterns allows us to see similarities and differences between us and plants, put them in the aspect of evolutionary continuity. However, this does not change the fact that the use of medical imaging procedures and parameterization tools in the projects points to the biopolitical exploitation of nonhuman organisms. Typically, the

use of biometric techniques serves the self-referential critique of operating procedures, but it is difficult not to take into account the fact that plant bodies are objects of medical research here, sometimes only for human cognitive purposes.

Therefore, the potential of posthumanism is not expressed in projects based on biometric data, they do not shape new, border life forms, as happens in the case of bio-art projects. The posthuman dimension of these realizations emerges from the fact that: they operate in the human and nonhuman biological (biological "life itself") tissue and from the fact that complex, multidimensional relations occurring between various types of agency are one of the foundations of the analyzed projects. What is more, such projects also show the issue of biological connection of nonhuman corporeality with inorganic types of agency – machines and devices that annex physical forces (radiation).

The art projects which I have analyzed combine various interesting directions of reflection on the status of plants. They implement innovative storytelling strategies in reference to available solutions in the field of biomedical engineering. However, it should be emphasized that biometric tools and methods create special, very crucial forms of alliances of nonhuman organisms with technologies, but they also present the inside of their bodies as a collection of biodata, obtained with the help of special sensors and reconstructed with creative visuality models. Therefore, they always trigger questions about algorithmic reductionism, limitations and imprecision of such forms of representation.

Abstract

The aim of the article is to introduce the problem of plants' representations in the contemporary artistic projects based on medical imaging. The author analyses the problem in the perspective of posthumanistic philosophy, especially in reference to the theories of animal studies (Wolfe, Bakoff, Waldau). She also introduces the concept of Michael Marder, who builds his argument around the question of whether people are the only ones who have political, social and ethical rights. The second part of the article concerns strategies and method of plants' bodies parametrization used in the selected artistic project. The author presents a few of them to show how artists investigate the problem of identity, autonomy and agency of non-human beings, with special regard to plants. The projects are analyzed in reference to various theories of connections between human and non-human beings, as well as to biopolitics' strategies.

Keywords: body, affect, posthumanism, medical imaging, biometrics, plants, non-human actors

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